



# GE's Bently Nevada and Dust Networks Bring Real-Time Wireless Condition Monitoring to Nevada Energy

## SUMMARY

GE Energy's Bently Nevada™ Essential Insight.mesh™ wireless machine condition monitoring system extend online condition monitoring deep into the Nevada Energy power generation plant, increasing efficiency and uptime.

## CHALLENGE

Many plant assets were only monitored using a walk-around program with workers using portable data collectors. The limited amount of data collected made it difficult to observe trends and anticipate maintenance needs, but the cost of laying cable to extend the sensor network was prohibitive.

## SOLUTION

Nevada Energy deployed GE's Bently Nevada Essential Insight.mesh wireless vibration sensors which use Dust Networks' SmartMesh wireless network technology - many running on harvested vibration energy - on a wide range of pumps and fans. Data is wirelessly transmitted and integrated into GE's System 1 diagnostic platform and provides plant-wide data analysis enabling proactive maintenance and reducing the costs of plant operations.

## THE CHALLENGE

At the Fort Churchill Nevada Energy power plant, lack of accessibility and complex logistics made the collection of condition monitoring data for a broad range of essential assets a slow, manual process. Data was gathered using a walk-around program with portable data collectors.

"If you're walking around with a portable monitoring system, an asset might be fine when you walk around and check it," said Eddie Eubanks of the Nevada Energy Fort Churchill Operating Station in Yerington, Nevada. "The problem might only happen in the heat of the day and you didn't check it at the right time," he continued.

Accessibility and installation costs made installing a wired sensor network impractical causing some assets to be underserved.

## THE SOLUTION

GE designed the Essential Insight.mesh solution, using Dust Networks' SmartMesh® wireless network technology, to augment conventional hard-wired monitoring and hand-held portable monitoring strategies and extend on-line condition monitoring to remote areas of the plant.

Dust Networks' SmartMesh products are embedded in three components of the Essential Insight.mesh solution: the wSIM™ node, a wireless mesh network sensor supporting vibration and temperature analysis; the Repeater, a mesh-only node that extends network coverage; and the Manager Gateway, a gateway node that enables communication with other networks and protocols and also serves as the network manager. SmartMesh wireless nodes provided the resiliency and reliability needed to operate in a challenging RF environment, and their ultra low power requirements allowed sensors nodes to be truly wireless, running on batteries and, in some cases, on harvested energy.

"Essential Insight.mesh provides our customers with new options for monitoring machine health in locations that were previously inaccessible," said Sean Coyle, Product Line Manager, Bently Nevada Asset Condition Monitoring at GE Energy. "We chose Dust Networks' SmartMesh solution because it uniquely enables us to deliver a highly reliable system powered solely by batteries, or via energy harvested from the machinery vibration, which dramatically cuts the cost of deployment. This allows our customers to deploy more smarts precisely where they are needed, improving safety, decreasing energy consumption and increasing the cost-effectiveness of their operations."

Dust Network's SmartMesh IA-510 product family of motes and network managers is a scalable wireless mesh network solution with comprehensive security and advanced network management built-in. The intelligent network manager provides load balancing and deterministic power management - maximizing the time until first battery replacement - on an industrial strength, self-healing and self-sustaining network.

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*"It's benefiting us by informing us of potential problems before they actually happen so we benefit from doing proactive instead of reactive maintenance....Almost plug-and-play, it's that easy to install."*

**Eddie Eubanks  
Nevada Energy**

#### THE RESULTS

Nevada Energy deployed Essential Insight.mesh wireless vibration sensors on a wide range of pumps and fans. "We're getting data from equipment we never had data from before, informing us of potential problems before they actually happen," said Nevada Energy's Eddie Eubanks. Right away, data indicated the need to plan and schedule maintenance on some water cooling pumps.

#### IN CONCLUSION

Dust Network's SmartMesh product family provided the ultra low power, resilient, reliable, and scalable networking technology that GE's Bently Nevada needed to create a trouble-free and secure wireless sensor network that is faster to deploy than wired networks, provides vastly better coverage than walk-around programs, and costs 50-80% less than wired networks.

#### WHY WORK WITH DUST NETWORKS?

Dust Networks, a pioneer in the field of wireless sensor networking, is defining the way to wirelessly connect smart devices. Using standards-based network technology, Dust Networks provides reliable, resilient and scalable network solutions with advanced network management and comprehensive security features.

#### ABOUT GE MEASUREMENT & CONTROL SOLUTIONS

GE Measurement & Control Solutions is a leading innovator in advanced, sensor-based measurement, non-destructive testing and inspection and condition monitoring, delivering accuracy, productivity and safety to a wide range of industries, including oil & gas, power generation, aerospace, transportation and healthcare. It has over 40 facilities in 25 countries and is part of GE Energy Services, which provides cleaner, smarter, more efficient solutions for its customers. For further information, visit [www.ge-mcs.com](http://www.ge-mcs.com).